

## **PART TWO: Ambisonic Industrial Sound Test – Response Form**

Participant Code: \_\_\_\_\_ Date: \_\_\_\_\_

Each sound clip you heard represents a scene from an extinct industrial setting. You will hear how long time you have left for answering. Please respond to each sound as follows:

<b>Sound #</b>	<b>What sound do you think it is?</b>	<b>How far away does it feel?</b>	<b>What kind of movement/action do you associate with it?</b>	<b>How did the sound make you feel? (Emotion / Physical Response)</b>
1				
2				

3				
4				

**Open-ended reflection (Optional):**

Did the sound help you imagine the historical work environment?

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Did any sound feel unfamiliar yet understandable? How? (Please use sound # to indicate which sound you want to mention.)

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## **PART THREE: Sound-Only Navigation in VR – Response & Mapping Form**

Participant Code: \_\_\_\_\_ Date: \_\_\_\_\_

Please draw the map you imagined during your sound-only navigation below. Indicate important landmarks, movement paths, sound sources, or events.

**Written Reflections:**

1. What events or actions did you associate with specific sound locations?

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2. Did you feel oriented during the navigation? Why or why not?

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3. What made it easier or harder to understand the space using only sound?

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## **PART FOUR: Final Questionnaire**

Participant Code: \_\_\_\_\_ Date: \_\_\_\_\_

### **Section A: Prior Experience with Sound & Museums**

Have you used an online museum before?

Yes  No

If yes, how frequently?

Once  Occasionally  Frequently

Could you please write down your top three favourite online museums?

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In previous online museum visits, how often did you notice sound as a feature?

Always  Often  Sometimes  Rarely  Never

How would you rate the importance of sound in your general daily environment?

Very important    Important    Neutral    Unimportant    Not important at all

**Section B: Experience During This Study**

Please rate each of the following using this scale:

1 = Strongly Disagree, 5 = Strongly Agree

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Sound helped me understand the environment even without visuals.					
I found the spatial quality of sound easy to interpret.					
Sounds helped me imagine movement or physical processes.					
I found the industrial sounds realistic or believable.					
Sound made the experience more immersive.					
I felt emotionally engaged through sound.					
I imagined the space more clearly with sound alone.					

I felt oriented while navigating through sound.					
The sound practice helped me identify and localise sound sources better.					
Sound reminded me of personal memories.					

**Section C: Multisensory Connection**

Did any sound evoke memories linked to another sense (e.g., smell, touch)?

- Yes  No

If yes, please describe briefly:

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Did you feel that your imagination filled in missing visual information based on sound?

- Yes  No  Not sure

Compared to visual experiences, how engaging was the sound-based experience?

- More engaging  Equally engaging  Less engaging

## Section D: Future Preferences & Reflections

Would you prefer online museums to include more sound in the future?

- Yes  Maybe  No

Which of the following sound types were most useful? (Tick all that apply)

- Environmental/natural sounds
- Machine/industrial sounds
- Spatial cues (distance/direction)
- Voice narration or speech
- Rhythms, pulses, or musical tones

Which format felt most effective for understanding space through sound?

- Sound practice session (if you have attended)
- Ambisonic industrial soundscapes
- VR sound-only navigation

Any final comments on your experience?

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## **PART FIVE: Short Semi-structured Interview**

### **Theme 1: Perception of Sound in Absence of Vision**

1. Compared to current online museums, what do you think sound can do in the future online museums?
2. When visual cues were unavailable, how did you use sound to make sense of the environment?
3. Did any particular sound give you a strong sense of 'place' or help you form a mental image? Can you describe that?

### **Theme 2: Cognitive and Sensory Effects**

1. Did you notice any changes in how you perceive or respond to sound after the sound practice session?
2. Were there moments when sound helped you remember something, or connected to a past experience?

### **Theme 3: Industrial Environment Understanding**

1. How believable or immersive did you find the industrial sound scenes? What helped or hindered your understanding?

### **Theme 4: Navigation and Multisensory Engagement**

1. During the VR navigation, how did you decide where to go? What role did sound play in guiding you?
2. Can you please talk through your drawing of the map?

### **Optional Tailored Follow-Ups (Based on Questionnaire Responses)**

1. If participant mentioned that he/she is "emotionally engaged", ask them to tell me more about it.
2. If participants rated anything "very" or "less" helpful, ask them to explain why.

## Day 7 Follow-Up Email (Experimental Group)

Dear [Participant Name],

Thank you again for taking part in the sound practice session. We're conducting a short follow-up to understand your ongoing engagement with sound.

Please respond by rating the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree):

1. I have become more aware of background sounds in my daily life.
2. I feel more confident identifying unfamiliar sounds.
3. I find myself using sound to imagine or understand places.
4. I am more sensitive to how sound reflects distance or movement.
5. I remember specific sounds from the session clearly.
6. I use sound more consciously in unfamiliar environments.

Any other comments or observations? (Optional)

Thank you very much for attending to this research. There will be another follow-up email send to you after 14 days. See you then! I hope you have a wonderful day 😊.

Best,

Yuan

## **Day 21 Follow-Up Email (Experimental Group)**

Dear [Participant Name],

It has been three weeks since your participation in the sound practice session. Please help us by rating the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree):

1. I still recall techniques or moments from the sound session.
2. Sound continues to help me interpret unfamiliar or unclear spaces.
3. My listening habits have changed since the session.
4. I notice spatial qualities (like distance or direction) in sound more often.
5. The sound session has had a lasting influence on how I process sensory information.

Feel free to include anything else you'd like to share: (Optional)

Thank you very much again for your effort! Your contribution will be very helpful and powerful for this research and online museum development. Please feel free to contact me anytime if you would like to add or withdraw your data from this research before the end of July 2025. I hope you have a nice day!

Best wishes,

Yuan